We therefore must solve

$$1/\kappa[(\partial T/\partial t)+v(\partial T/\partial z)]=\nabla^2 T+(1/k)\delta(\mathbf{r})e^{i\omega t}, \quad (4)$$

where $\kappa=k/\rho c$ subject to $T\to 0$ at infinity.

It is easily shown that the time dependence of T is $e^{i\omega t}$ and the first derivative term can be removed by a device similar to that used for ordinary differential equations. By the substitution,

$$T=\exp[(i\omega t+(vz/2\kappa)]\varphi(x, y, z) \quad (5)$$

the equation,

$$\nabla^2\varphi+\lambda^2\varphi=-(\delta(\mathbf{r})/k)\exp[-(vZ/2\kappa)] \quad (6)$$

where

$$\lambda=\frac{v}{2\kappa}\left[\left(\frac{R+1}{2}\right)^{\frac{1}{2}}+i\left(\frac{R-1}{2}\right)^{\frac{1}{2}}\right]$$

$$R=\left(1+\frac{16\omega^2\kappa^2}{v^4}\right)^{\frac{1}{2}}$$

is obtained. The solution of Eq. (6) is[5]

$$\varphi(x, y, z)=\frac{1}{4\pi k}\int \exp[-(vz/2\kappa)]\delta(\mathbf{r}) \times\frac{\exp[\pm\lambda((x-x_1)^2+(y-y_1)^2+(z-z_1)^2)^{\frac{1}{2}}]}{((x-x_1)^2+(y-y_1)^2+(z-z_1)^2)^{\frac{1}{2}}}dV_1 \quad (7)$$

by using Eq. (3) the integral is easily evaluated. Only the negative sign satisfies the boundary condition giving:

$$\varphi=(1/4\pi kr)\exp\{-(v/2\kappa)[(R+1)/2]^{\frac{1}{2}}+i[(R-1)/2]^{\frac{1}{2}}r\}$$

$$T=(1/4\pi kr)\exp\{(vz/2\kappa)-(vr/2\kappa)[(R+1)/2]^{\frac{1}{2}} +i(\omega t-[(R-1)/2]^{\frac{1}{2}}r)\} \quad (8a)$$

$$r=(x^2+y^2+z^2)^{\frac{1}{2}}. \quad (8b)$$

For a constant source, $\omega=0$ and $R=1$ this reduces to

$$T=(1/4\pi kr)\exp[(v/2\kappa)(z-r)]. \quad (9)$$

By taking the real and imaginary parts of Eq. (8b) the response to cosine and sine sources are obtained:

$$T=(1/4\pi kr)\exp\{(v/2\kappa)[[(R-1)/2]^{\frac{1}{2}}r-z]\} \times\cos(\omega t-[(R-1)/2]^{\frac{1}{2}}r) \quad (10a)$$

$$T=(1/4\pi kr)\exp\{(v/2\kappa)[[(R+1)/2]^{\frac{1}{2}}r-z]\} \times\sin(\omega t-[(R-1)/2]^{\frac{1}{2}}r). \quad (10b)$$

By combining (9) and (10a) Podolsky's solution[4] for a $(1-\cos\omega t)$ source is obtained.

Dr. Podolsky's valuable criticism is gratefully acknowledged.

[1] Wilson, Proc. Cambridge Phil. Soc. **12**, 406 (1904).
[2] H. S. Carslaw and J. C. Jaeger, *Conduction of Heat in Solids* (Oxford University Press, London, 1947), Sec. 106.
[3] D. Rosenthal, Trans. Am. Soc. Mech. Engrs. **68**, 849–66 (1940).
[4] B. Podolsky, J. Appl. Phys. **22**, 581–84 (1951).
[5] A. G. Webster, *Partial Differential Equations* (New York, 1933), Sect. 65.

JOURNAL OF APPLIED PHYSICS VOLUME 22, NUMBER 12 DECEMBER, 1951

Author Index to Volume 22

References with (L) are to Letters to the Editor

Achter, M. R. and R. Smoluchowski. Diffusion in grain boundaries and their structure—1260
Aden, A. L. Electromagnetic scattering from spheres with sizes comparable to the wavelength—601
Aden, Arthur L. and Milton Kerker. Scattering of electromagnetic waves from two concentric spheres—1242
Affleck, John H. (see Hensley, Eugene B.)—359(L)
Aldrich, L. T. Evaporation products of barium oxide from various base metals and of strontium oxide from platinum—1168
Alexander, B. H. (see Kuczynski, G. C.)—344
——, **M. H. Dawson, and H. P. Kling.** Deformation of gold wire at high temperature—439
Alexanderson, E. L. (see Gemant, Andrew)—460
Alger, Raymond S. (see Schulman, James H.)—1479
Allmand, D. E. (see McMillen, J. H.)—360(L)
Anderson, R. B. (see McCartney, J. T.)—1441
Andrews, C. L. Diffraction pattern of microwaves near rods—465
—— Erratum: Diffraction pattern in a circular aperture measured in the microwave region—520
Angelakos, D. J. Current and charge distributions on antennas and open-wire lines—910
Antes, Leland L. and Norman Hackerman. Contact potential variations on freshly condensed metal films at low pressures—1395
Anthony, Robert L. (see Witte, Robert S.)—689
Artman, Robert A. and Donald O. Thompson. Elastic parameters of beta-brass—358(L)
Attwood, Stephen S. Surface-wave propagation over a coated plane conductor—504
Austin, A. E. and C. M. Schwartz. Modification of a positive-replica technique for electron microscopy—847(L)
Averbach, B. L. X-ray detection of long-range order in Ni_3Mn—1088(L)
—— (see Warren, B. E.)—1493
Bachman, C. H., Harold Eubank, and George Hall. Hollow cathode for positive ion studies in cathode-ray tubes—1208
Balent, R. (see Iversen, H. W.)—324
Bandel, Herman W. Corona from ice points—984(L)
Baños, Alfredo, Jr., David S. Saxon, and H. Gruen. Propagation characteristics in a coaxial structure with two dielectrics—117
Barnes, B. T. (see Kenty, C.)—1006
Beams, J. W. and H. S. Morton, Jr. Transmission line Kerr cell—523(L)
Bear, Richard S. and Orvil E. A. Bolduan. Periodic statistical distortion of unidirectionally ordered diffractors, with application to collagen—191
Becker, Herbert (see Gerard, George)—1298(L)
Belanger, J. R. (see Kasper, J. S.)—361(L)
Beljers, H. G., W. J. van de Lindt, and J. J. Went. A new point of view on magnetic losses in anisotropic bars of ferrite at ultra-high frequencies—1506(L)
Bennett, F. D. Optimum source size for the Mach-Zehnder interferometer—184
—— Effect of size and spectral purity of source on fringe pattern of the Mach-Zehnder interferometer—776
Bennett, R. R. and A. S. Fulton. Generation and measurement of low frequency random noise—1187
Benson, W. H., Jr. (see LaGrone, A. H.)—672
Beth, Richard A. and Charles P. Wells. Finite deflections of a cantilever-strut—742
Bever, M. B. and L. B. Ticknor. Method for determining the energy stored during cold-working of metals—1297(L)
—— (see Michael, A. B.)—1403
Birnbaum, George, S. J. Kryder, and Harold Lyons. Microwave measurements of the dielectric properties of gases—95
Blaha, F. and J. A. Schedling. Improvements in visual depiction of magnetic lines of force by means of a gas discharge—11
Blair, G. W. Scott (see Reiner, M.)—236
Bleil, Carl E. (see Howard, Robert A.)—360(L)
Blizard, Robert B. Visco-elasticity of rubber—730

Boadway, J. D. Condenser aperture device for electron microscopes—104(L)
Bolduan, Orvil E. A. (see Bear, Richard S.)—191
Bonfiglioli, G. and G. Montalenti. On linear expansion coefficient and melting point of metals—1089(L)
Bowen, R. J. (see Šimon, I.)—177
—— (see Šimon, I.)—848
Boyer, R. F. Relation of tensile strength to brittle temperature in plasticized polymers—723
Brackett, F. S. (see Daniel, J. H.)—542
Brillouin, L. Maxwell's demon cannot operate: Information and entropy. I—334
—— Physical entropy and information. II—338
—— Information theory and most efficient codings for communication or memory devices—1108
Brockhouse, B. N. (see Peppiatt, H. J.)—985(L)
Brown, F. W. (see Parkins, W. E.)—1012
Buchdahl, Rolf and Lawrence E. Nielsen. Application of Nutting's equation to the viscoelastic behavior of certain polymeric systems—1344
Bundy, F. P., H. M. Strong, and A. B. Gregg. Measurement of velocity and pressure of gases in rocket flames by spectroscopic methods—1069

Cagle, F. Wm., Jr. and Henry Eyring. Application of the absolute reaction rate theory to some problems in annealing—771
Caldecourt, V. J. (see Matheson, L. A.)—1176
Calnan, E. A. and C. J. B. Clews. Deformation of body-centered cubic metals—1508(L)
Campbell, H. N. X-ray absorption in a crystal set at the Bragg angle—1139
Carruthers, J. A. (see Woonton, G. A.)—390
Chaney, Jesse Gerald. A critical study of the circuit concept—1429
Chang, Lo-Ching. Coefficients of thermal expansion of Au-Cd alloys containing 47.5 atomic percent Cd—525(L)
Cheney, M. G., Jr., and Robert B. Watson. Diffraction of electromagnetic waves by two conducting parallel half-planes—675
Clark, O. H., W. W. Woods, and J. R. White. Lubrication at extreme pressures with mineral oil films—474
Clews, C. J. B. (see Calnan, E. A.)—1508(L)
Cobine, J. D. and D. A. Wilbur. Electronic torch and related high freqiency phenomena—835
Coburn, N. Compressible supersonic flow in jets under the Kármán-Tsien pressure-volume relation—124
Codrington, R. S. (see Holroyd, L. V.)—696
Cohen, S. T. (see Plesset, M. S.)—350
Cohn, Seymour B. Electric and magnetic constants of metallic delay media containing obstacles of arbitrary shape and thickness—628
Collins, S. C. (see Eldin, A. S.)—1296(L)
Coolidge, John E. and George Schulz. Static electrification of dust particles on dispersion into a cloud—103(L)
Corney, G. M. Comment on nomenclature in "Electron microradiography of electrodeposited metals"—682(L)
Corrsin, Stanley. On the spectrum of isotropic temperature fluctuations in an isotropic turbulence—469; erratum—1292
Czyzewski, Harry. Branching of slip lines in alpha-brass—846(L)

Daniel, J. H. and F. S. Brackett. Electrical method for investigating the nature and behavior of small, airborne, charged particles—542
Dawson, M. H. (see Alexander, B. H.)—439
Decker, B. F. (see Kasper, J. S.)—361(L)
—— **and David Harker.** Relations between initial and final orientations in rolling and annealing of silicon ferrite—900
Dienes, G. J. On the volume diffusion of metals—848(L)
—— (see Parkins, W. E.)—1012
—— Kinetics of ordering in the alloy AuCu—1020
Doolittle, Arthur K. Studies in Newtonian flow. I. The dependence of the viscosity of liquids on temperature—1031
—— Studies in Newtonian flow. II. The dependence of the viscosity of liquids on free-space—1471
Dow, W. G. (see Welch, H. W., Jr.)—433
Dunbar, A. S. General formulation for calculation of shaped-beam antennas—1217(L)
Dunning, Kenneth L. and Rufus G. Fellers. Susceptance of a thin iris in circular wave guide with the TM_{01} mode incident—1316
Duwez, Pol. Allotropic transformation of hafnium—1174

Easley, M. A. Probe technique for the measurement of electron temperature—590
—— **and W. W. Mumford.** Electron temperature *vs* noise temperature in low pressure mercury-argon discharges—846(L)
—— (see Kenty, C.)—1006
Edwards, James W., Rudolph Speiser, and Herrick L. Johnston. High temperature structure and thermal expansion of some metals as determined by x-ray diffraction data. I. Platinum, tantalum, niobium, and molybdenum—424
Eisenstein, A. Leaky-condenser oxide cathode interface—138
Ekstein, H. and T. Schiffman. Elastic vibrations of almost cubic parallelepipeds—1215(L)
Eldin, A. S. and S. C. Collins. Fracture and yield stress of 1020 steel at low temperatures—1296(L)
Elliott, H. A. (see Woonton, G. A.)—390
Emrich, R. J. (see Laponsky, A. B.)—1297(L)
Eubank, Harold (see Bachman, C. H.)—1208
Eubanks, R. A. (see Sternberg, E.)—1121
Evans, Warren W. (see Schremp, Frederic W.)—711
Ewing Maurice (see Press, Frank)—892
Eyring, Henry (see Cagle, F. Wm., Jr.)—771

Fano, U. (see Goldstein, N.)—417
Farber, Erich A. Free convection heat transfer from electrically heated wires—1437
Farnsworth, H. E. and M. J. Lun. Secondary emission of nickel-barium mixtures and rhenium when bombarded by electrons with energies from 50 to 8000 electron volts—77
Faro, I. D. V., T. R. Small, and F. K. Hill. Hypersonic flow at a Mach number of 10—220
Feinstein, J. Tropospheric propagation beyond the horizon—1292(L)
Fellers, Rufus G. (see Dunning, Kenneth L.)—1316
Feng, I-Ming. Applications of polystyrene particles in conjunction with shadow casting to the study of polished metallic surfaces—820
Ferro, A. and G. Montalenti. Internal friction of ferromagnetic materials—565
Ferry, John D. (see Schremp, Frederic W.)—711
——, **Edwin R. Fitzgerald, Myrle F. Johnson, and Lester D. Grandine, Jr.** Mechanical properties of substances of high molecular weight. X. The relaxation distribution function in polyisobutylene and its solutions—717
Field, J. E. and S. D. Gehman. Noncontact temperature measuring device—106(L)
Fifer, Stanley. Studies in nonlinear vibration theory—1421
Fisher, J. C. Calculation of diffusion penetration curves for surface and grain boundary diffusion—74
—— (see Fullman, R. L.)—1350
Fitzgerald, Edwin R. (see Ferry, John D.)—717
Flynn, T. (see Reich, H. J.)—682(L)
Foner, S. (see Pugh, E. M.)—487
Forrester, Jay W. Digital information storage in three dimensions using magnetic cores—44
Forster, Michael J. and Darwin J. Mead. Electrical properties of some carbon black-oil suspensions—705

Frank, F. C. Distribution of slip in metal crystals—1386(L)
French, Rolland Sydney. Plasticity and conductivity, analogous flow phenomena in copper alloys—105(L)
Friedman, Bernard. Amplification of the traveling wave tube—443
Fry, Ruth Baumann and William J. Fry. Crystal systems with low loss—198
Fry William J. (see Fry, Ruth Baumann)—198
Frye, W. E. Accuracy of the long-range ballistic rocket—585
Fullman, R. L. Interfacial free energy of coherent twin boundaries in copper—448
—— Crystallography and interfacial free energy of noncoherent twin boundaries in copper—456
—— **and J. C. Fisher.** Formation of annealing twins during grain growth—1350
Fulton, A. S. (see Bennett, R. R.)—1187

Gamble, E. H. and B. W. Hatten. Design and analysis of a conservative dynamic load simulator—1250
Garrett, Milan Wayne. Axially symmetric systems for generating and measuring magnetic fields. Part I—1091
Gehman, S. D. (see Field, J. E.)—106(L)
Geisler, A. H. (see Newkirk, J. B.)—290
Gemant, Andrew, Edward Hines, and E. L. Alexanderson. Leak location by radioactive gases in buried pipes—460
Gerard, George and Herbert Becker. Column behavior under conditions of compressive stress wave propagation—1298(L)
Germer, L. H. Arcing at electrical contacts on closure. Part I. Dependence upon surface condition and circuit parameters—955
—— Arcing at electrical contacts on closure. Part II. The initiation of an arc—1133
Gibson, J. E. (see Reich, H. J.)—682(L)
Ginther, Robert J. (see Schulman, James H.)—1479
Glaser, Frank W. Note on the metallic behavior of $MoSi_2$—103(L)
Glass, W. G. (see Smullin, L. D.)—1124
Gleichauf, Paul H. Electrical breakdown over insulators in high vacuum—535
—— Electrical breakdown over insulators in high vacuum—766
Goertz, Matilda. Iron-silicon alloys heat treated in a magnetic field—964
Goldstein, Ladislas. (see Parzen, Philip)—398
Goldstein, N., U. Fano, and H. O. Wyckoff. Directional distribution of 1040-Kev radiation from a high voltage x-ray tube—417
Goldwater, D. L. and R. E. Haddad. Certain refractory compounds as thermionic emitters—70
Grandine, Lester D., Jr. (see Ferry, John D.)—717
Green, L., Jr. (see Malmstrom, C.)—593
Gregg, A. B. (see Bundy, F. P.)—1069
Grieco, A. (see Rorden, H. C.)—842
Gross, G. and H. Pelzer. On creep and relaxation. III—1035
Gruen, H. (see Baños, Alfredo, Jr.)—117
Guth, E. (see Holroyd, L. V.)—696

Hackerman, Norman (see Antes, Leland L.)—1395
Haddad, R. E. (see Goldwater, D. L.)—70
Hahn, E. E. Some electrical properties of zinc oxide semiconductor—855
Hall, C. E. Scattering phenomena in electron microscope image formation—655
Hall, George (see Bachman, C. H.)—1208
Harker, David (see Decker, B. F.)—900
Harris, R. L. (see Ritter, H. L.)—169
Hart, Robert W. and Elliott W. Montroll. On the scattering of plane waves by soft obstacles. I. Spherical obstacles—376
—— (see Montroll, Elliott W.)—1278
Hasiguti, Ryukiti Robert and Tadamasa Hirai. Internal friction of cold-worked single crystals of copper—1084(L)
Haskell, N. A. Asymptotic approximation for the normal modes in sound channel wave propagation—157
Hatoyama, Mitio (see Komagata, Sakuji)—1290(L)
Hatten, B. W. (see Gamble, E. H.)—1250
Haworth, F. E. Electrode reactions in the glow discharge—606
Hein, C. C. and W. M. Hickam. Carbon, oxygen, and sulfur content of Chilean coppers as related to cuprous-oxide rectifiers—1192
Heine-Geldern, R. v. (see Pugh, E. M.)—487
Hempstead, C. F. (see Parratt, L. G.)—1502(L)
Henkels, H. W. Electrical properties of selenium: I. Single crystals—916
—— Electrical properties of selenium. II. Microcrystalline selenium—1265
Henry, Warren E. A finite difference treatment of a helium cryostat design problem—1439
Hensley, Eugene B. and John H. Affleck. Barium oxide on tungsten cathode interface—359(L)
Hertz, Hellmuth. Magnetic scaling circuit—107(L)
Hetherington, F. E. and James Reekie. Electrical resistivity of cold-worked copper-iron alloys—1293(L)
Hibi, T. and K. Ishikawa. On the initial decay of oxide-coated cathodes—986(L)
Hickam, W. M. (see Hein, C. C.)—1192
Higgins, Thomas James (see Reitan, Daniel Kinseth)—223
—— (see Van Bladel, J.)—329
—— Epitomization of the basic theory of the generalized Schwarz-Christoffel transformations as used in applied physics—365(L)
Hill, F. K. (see Faro, I. D. V.)—220
Hillier, James. Objective for use in the electron microscopy of ultrathin sections—135
Hines, Edward (see Gemant, Andrew)—460
Hines, M. E. Equivalent temperature of an electron beam—1385(L)
Hirai, Tadamasa (see Hasiguti, Ryukiti Robert)—1084(L)
Hoffman, R. E. and D. Turnbull. Lattice and grain boundary self-diffusion in silver—634
—— **and D. Turnbull.** Erratum: Lattice and grain-boundary self-diffusion in silver—984(L)
Holden, A. N. Yielding behavior of iron single crystals—1290(L)
Holm, Ragnar. Electric tunnel effect across thin insulator films in contacts—569; errata—1217
Holroyd, L. V., R. S. Codrington, B. A. Mrowca, and E. Guth. Nuclear magnetic resonance study of transitions in polymers—696
Holton, Gerald. Ultrasonic propagation in liquids under high pressures: Velocity measurements on water— 1407
Horio, M., S. Onogi, C. Nakayama, and K. Yamamoto. Viscoelastic properties of several high polymers—966
—— **and S. Onogi.** Dynamic measurements of physical properties of pulp and paper by audiofrequency sound—971
—— **and S. Onogi.** Forced vibration of reed as a method of determining viscoelasticity—977
Horn, F. Hubbard. On asymmetric heat conduction in copper-copper oxide rectifiers—1214(L)
Horton, C. W. Semiconductor bornite—364(L)
—— **and F. C. Karal, Jr.** On the diffraction of a plane electromagnetic wave by a paraboloid of revolution—575
—— **and C. M. McKinney, Jr.** Experimental investigation of the dielectric rod antenna of circular cross section excited in the dominant mode—1246
Householder, A. S. (see Sheppard, C. W.)—510
Houston, Robert E. and Robert H. Noble. Edge effects in a circular aperture—1295(L)
Howard, Robert A. and Carl E. Bleil. Water movement induced by compaction of clastic sediments—360(L)
Hsu, En-Yun (see McNown, John S.)—864
Hubbard, C. P. (see Smyth, J. B.)—1387(L)

Hudson, G. E. Theory of the dynamic plastic deformation of a thin diaphragm—1

Ishikawa, K. (see Hibi, T.)—986(L)
Iversen, H. W. and R. Balent. Correlating modulus for fluid resistance in accelerated motion—324

Jacob, L. (see Shah, J. R.)—1236
Jacobs, Robert B. Design of molecular pumps—217
Jakob, M. (see Wilson, L. H.)—1027
Jaumot, Frank E., Jr. and Foster C. Nix. Note on a simple technique for obtaining absorption coefficients of metals and alloys for complex radioactive spectra—1294(L)
Jepsen, Robert L. and Marcel W. Muller. Enhanced emission from magnetron cathodes—1196
Johnson, G. W. Epitaxy of alkali chlorides on metals—797
Johnson, Myrle F. (see Ferry, John D.)—717
Johnston, Herrick L. (see Edwards, James W.)—424

Kane, Evan O. Optical absorption of barium oxide with excess barium—1214(L)
Kantrowitz, Arthur (see Perry, Robert W.)—878
Karal, F. C., Jr. (see Horton, C. W.)—575
Kasper, J. S., B. F. Decker, and J. R. Belanger. Crystal structure of the sigma-phase in the Co-Cr system—361(L)
Keating, D. T. and B. E. Warren. Long-range order in beta-brass and Cu_3Au—286
Kedesdy, H. (see Lehovec, K.)—65
Keen, R. (see Malmstrom, C.)—593
Kenty, C., M. A. Easley, and B. T. Barnes. Gas temperatures and elastic losses in low pressure mercury-argon discharges —1006
Kerker, Milton (see Aden, Arthur L.)—1242
Kikuchi, Makoto (see Komagata, Sakuji)—1290(L)
King, Allen L. (see Lawton, Richard W.)—1340
King, Ronold. Theory of V-antennas—1111
Klick, Clifford C. (see Schulman, James H.)—1479
Kling, H. P. (see Alexander, B. H.)—439
Knudsen, H. Lottrup. Necessary number of elements in a directional ring aerial—1299
Koehler, James S. (see Neurath, Peter W.)—621
Komagata, Sakuji, M. Hatoyama, M. Shibuya, W. Sasaki, T. Yamamoto, and M. Kikuchi. AC characteristics of Si *p-n* junction—1290(L)
Kornhauser, E. T. Propagation on dielectric coated wires—525(L)
—— Radiation field of helical antennas with sinusoidal current—887
Krabacher, E. J. (see Merchant, M. Eugene)—1507(L)
Kramer, R. L. (see McMillen, J. H.)—360(L)
Kryder, S. J. (see Birnbaum, George)—95
Kuczynski, G. C. and B. H. Alexander. Metallographic study of diffusion interfaces—344
—— **and R. Landauer.** Measurement of carbon diffusion in metallic carbides—952
Kunkel, Wulf B. Static electrification of dust particles on dispersion into a cloud—103(L)

Lafferty, J. M. Boride cathodes—299
LaGrone, A. H., W. H. Benson, Jr., and A. W. Straiton. Attenuation of radio signals caused by scattering—672
—— Reply to J. B. Smyth and C. P. Hubbard—1387(L)
Laitone, E. V. Experimental measurement of incompressible flow along a cylinder with a conical nose—63
Landauer, R. Associated Legendre polynomial approximations —87
—— (see Kuczynski, G. C.)—952
Laponsky, A. B. and R. J. Emrich. New method for the production of air shocks in a tube—1297(L)
Larach, S. and R. E. Shrader. Cathodoluminescence of zinc orthosilicate with manganese activator—362(L)
Lawson, W. D. A method of growing single crystals of lead telluride and lead selenide—1444
Lawton, Richard W. and Allen L. King. Free longitudinal vibrations of rubber and tissue strips—1340
Leavitt, W. Z. (see Michael, A. B.)—1403
Lee, T. D. Difference between turbulence in a two-dimensional fluid and in a three-dimensional fluid—524(L)
Lehan, Frank W. Expected number of crossings of axis by linearly increasing function plus noise—1067
Lehovec, K. and H. Kedesdy. Graphical determination of the Fermi level in a simple impurity semiconductor—65
—— Recovery of selenium rectifiers after a voltage pulse in the blocking direction—934
Lengyel, Bela A. Note on reflection and transmission—263
—— Reflection and transmission at the surface of metal-plate media—265
Levine, Harold and Charles H. Papas. Theory of the circular diffraction antenna—29
Levy, Robert A. (see Schulman, James H.)—1479
Liang, S. Chu. Some measurements of thermal transpiration—148
Lin, Wei-guan. Microwave filters employing a single cavity excited in more than one mode—989
Loeb, Arthur L. Theory of the envelope type of thermal conductivity tests—282
—— Erratum: A theory of the envelope type of thermal conductivity tests—849
Loeb, Leonard B. (see Miller, Charles G.)—494
—— (see Miller, Charles G.)—614
—— (see Miller, Charles G.)—740
Lucke, Winston S. Electric dipoles in the presence of elliptic and circular cylinders—14
Ludeke, Carl A. Predominantly subharmonic oscillations—1321
Lukesh, Joseph S. (see Seybolt, A. U.)—986(L)
Lun, M. J. (see Farnsworth, H. E.)—77
Lundquist, G. (see Wegener, P.)—233(L)
—— (see Wegener, P.)—1077
Lyons, Harold (see Birnbaum, George)—95

McCartney, J. T. and R. B. Anderson. Electron microscopic replica studies of porosity in fused iron catalysts—1441
McKay, Kenneth G. Pulse method of determining the energy distribution of secondary electrons from insulators—89
McKinley, D. W. R. Deceleration and ionizing efficiency of radar meteors—202
McKinney, C. M., Jr. (see Horton, C. W.)—1246
McLucas, John L. and Richard C. Raymond. Power spectrum of a narrow band noise passed through a nonlinear impedance element—1211
McMahon, H. O. (see Šimon, I.)—177
—— (see Šimon, I.)—848
McMillen, J. H., R. L. Kramer, and D. E. Allmand. Impact flash at high speed water entry—360(L)
McNown, John S. and En-Yun Hsu. Approximation of axisymmetric body forms for specified pressure distributions —864
McPherson, J. C. (see Millsaps, Knox)—429
Malmstrom, C., R. Keen, and L. Green, Jr. Some mechanical properties of graphite at elevated temperatures—593
Marcuvitz, N. and J. Schwinger. On the representation of the electric and magnetic fields produced by currents and discontinuities in wave guides. I—806
Martin, D. L. (see Newkirk, J. B.)—290
Mason, J. H. Random noise in dielectric materials—235(L)
Matheson, L. A. and V. J. Caldecourt. Electrical charge storage in polystyrene capacitors—1176
Mathews, W. E. Transmission-line equivalent of electronic traveling-wave systems—310
Mathis, H. F. On a theorem of Brouwer—1084(L)

May, Albert. Effect of surface condition of a sphere on its water-entry cavity—1219
Mead, Darwin J. (see Forster, Michael J.)—705
Medicus, G. and G. Wehner. Noble gas hot cathode diodes with negative arc drop—1388(L)
Merchant, M. Eugene and E. J. Krabacher. Radioactive tracers for rapid measurement of cutting tool life—1507(L)
Michael, A. B., W. Z. Leavitt, M. B. Bever, and H. R. Spedden. A technique for preparing beta-ray autoradiographs of metals and minerals—1403
Middleton, David. On the theory of random noise. Phenomenological models. I—1143
—— On the theory of random noise. Phenomenological models. II—1153
—— Errata: On the theory of random noise. Phenomenological models. I—1326
Miller, Charles G. and Leonard B. Loeb. Positive coaxial cylindrical corona discharges in pure N_2, O_2, and mixtures thereof—494
—— **and Leonard B. Loeb.** Negative coaxial cylindrical discharges in pure N_2, O_2, and mixtures thereof—614
—— **and Leonard B. Loeb.** Starting potentials of positive and negative coronas with coaxial geometry in pure N_2, pure O_2, and various mixtures at pressures from atmospheric to 27 mm—740
Miller, Kenneth S. One-sided Green's function—1054
Miller, William. Effective earth's radius for radiowave propagation beyond the horizon—55
Millsaps, Knox and J. C. McPherson. Oscillations of magnetic suspensions—429
Mindlin, Raymond D. Thickness-shear and flexural vibrations of crystal plates—316
Minorsky, N. Parametric excitation—49
Montalenti, G. (see Ferro, A.)—565
—— (see Bonfiglioli, G.)—1089(L)
Montgomery, G. Franklin. Cascaded binary counter with feedback—780
Montroll, Elliott W. (see Hart, Robert W.)—376
—— **and Robert W. Hart.** Scattering of plane waves by soft obstacles. II. Scattering by cylinders, spheroids, and disks—1278
Moran, James H. Discrete energy levels of a nonlinear oscillator—1355
Morgan, F. H. Spectral emissivity of coatings of thoria and other refractories as a function of temperature—108(L)
Morrison, H. L. (see Rogers, F. T., Jr.)—1476
Morton, H. S., Jr. (see Beams, J. W.)—523(L)
Motz, H. Applications of the radiation from fast electron beams—527; errata—1217
Mrowca, B. A. (see Holroyd, L. V.)—696
Mukherjee, N. R. and Oliver Row. Studies of thin films by electron diffraction—681(L)
—— Surface tension of liquid metals—1215(L)
Muldawer, L. X-ray measurement of long-range order in β-AgZn—663
Muller, Marcel W. (see Jepsen, Robert L.)—1196
Mumford, W. W. (see Easley, M. A.)—846(L)
Munk, Max M. Generality of mixed gas flows—524(L)
Mutschler, E. C. (see Pugh, E. M.)—487

Nakayama, C. (see Horio, M.)—966
Nathan, Alan M. Dynamic method for measuring the specific heat of metals—234(L)
Neurath, Peter W. and James S. Koehler. Plastic deformation of pure single crystals of lead and copper—621
Newkirk, J. B., R. Smoluchowski, A. H. Geisler, and D. L. Martin. Phase equilibria in an ordering alloy system—290
Nielsen, Lawrence E. (see Buchdahl, Rolf)—1344
Nix, Foster C. (see Jaumot, Frank E., Jr.)—1294(L)
Noble, Robert H. (see Houston, Robert E.)—1295(L)
Norman, N. and B. E. Warren. X-ray measurement of short range order in Ag-Au—483
Nowick, A. S. Anelastic effects arising from precipitation in aluminum-zinc alloys—925
—— Reinterpretation of experiments on intermetallic diffusion—1182

Ogawa, S. and D. Watanabe. Electron diffraction study on the ordered alloy Au_3Cu—1502(L)
Ohmart, P. E. A method of producing an electric current from radioactivity—1504(L)
Onogi, S. (see Horio, M.)—966
—— (see Horio, M.)—971
—— (see Horio, M.)—977
Opinsky, A. J. and R. Smoluchowski. Crystallographic aspect of slip in body-centered cubic single crystals. I. Theoretical considerations—1380
—— **and R. Smoluchowski.** The crystallographic aspect of slip in body-centered cubic single crystals. II. Interpretation of experiments—1488
—— **and R. Smoluchowski.** On the ratio of the critical shear stresses—1508(L)
O'Rourke, R. C. Three-dimensional photoelasticity—872

Pakswer, Serge and William O. Reed. Photoconductivity of composite photoemissive cathodes—987(L)
Papas, Charles H. (see Levine, Harold)—29
Parkins, W. E., G. J. Dienes, and F. W. Brown. Pulse-annealing for the study of relaxation processes in solids—1012
Parratt, L. G. and C. F. Hempstead. On the reliability of Geiger counter response at moderately high rates—1502(L)
Parzen, Philip and Ladislas Goldstein. Effect of hydrostatic pressure in an electron beam on the operation of traveling-wave devices—398
—— Comments on "Equivalent temperature of an electron beam"—1387(L)
Peach, M. O. Concept of force in dislocation theory—1359
Pelzer, H. (see Gross, G.)—1035
Penner, S. S. and D. Weber. Emission of radiation from diatomic gases. II. Experimental determination of effective average absorption coefficients of CO—1164
—— Erratum: The emission of radiation from diatomic gases. I. Approximate calculations—1298
Peppiatt, H. J. and B. N. Brockhouse. Initial susceptibility of nickel under tension—985(L)
Perry, Robert W. and Arthur Kantrowitz. Production and stability of converging shock waves—878
Philpott, Delbert E. Portrait shadow-casting—982(L)
Plesset, M. S. and S. T. Cohen. Scattering and absorption of gamma-rays—350
Podolsky, Boris. Problem in heat conduction—581
Pohl, Herbert A. Motion and precipitation of suspenoids in divergent electric fields—869
Polachek, H. (see Seeger, R. J.)—640
Poritsky, H. and H. Weil. Conduction of current in a metallic pipe filled with a conducting liquid—1002
Press, Frank and Maurice Ewing. Theory of air-coupled flexural waves—892
Preston, F. W. Erratum: Mechanical properties of glass—48
Prim, R. C. Note on the partial differential equations describing steady current flow in intrinsic semiconductors—1388(L)
Pugh, E. M., R. v. Heine-Geldern, S. Foner, and E. C. Mutschler. Kerr cell photography of high speed phenomena—487
Pulvari, Charles F. Electrostatically induced permanent memory—1039

Quinn, Fred A., Jr., Donald E. Roberts, and R. N. Work. Volume-temperature relationships for the room temperature transition in Teflon—1085(L)

Rabinowicz, Ernest. Nature of the static and kinetic coefficients of friction—1373
Radavich, John and Charles Wert. Study of precipitates of C and N in iron with an electron microscope—367
Raff, S. J. Reflecting surface to simulate an infinite conducting plane—610
Rauch, S. E. Mathematical data for electron drain on positive ion sources—1128
Raymond, Richard C. (see McLucas, John L.)—1211
Read, W. T., Jr. (see Treuting, R. G.)—130
—— Formulas for the determination of residual stress in wires by the layer removal method—415
Reed, S., Jr. (see Wegener, P.)—1077
Reed, William O. (see Pakswer, Serge)—987(L)
Reekie, James (see Hetherington, F. E.)—1293(L)
Reich, H. J., P. M. Schultheiss, J. G. Skalnik, T. Flynn, and J. E. Gibson. Effect of auxiliary current on transistor operation—682(L)
Reiner, M. and G. W. Scott Blair. Erratum: Original authorship of formulas given in Clark and Deutsch's paper—236
Reis, Alfred J., Jerome J. Slade, and Sigmund Weissmann. New x-ray diffraction method for studying imperfections of crystal structure in polycrystalline specimens—665
Reisner, John H. Permanent magnet lenses—561
Reitan, Daniel Kinseth and Thomas James Higgins. Calculation of the electrical capacitance of a cube—223
Reverdin, D. L. Electron optical exploration of space change in a cut-off magnetron—257
Rigby, E. Caroline (see Woonton, G. A.)—390
Rigrod, W. W. Behavior of the resistance ignitor in mercury—787
Rinehart, John S. Some quantitative data bearing on the scabbing of metals under explosive attack—555
—— Work-hardening of mild steel by explosive attack—1086(L)
—— Remark on the composition dependence of the elastic parameters of beta-brass—1089
—— Some experimental indications of the stresses produced in a body by an exploding charge—1178
Ritchie, R. H. Temperature function in a moving medium—1389(L)
Ritter, H. L., R. L. Harris, and R. E. Wood. On the x-ray absorption correction for encased diffractors in the Debye-Scherrer technique—169
Roberts, B. W. (see Warren, B. E.)—1493
Roberts, Donald E. (see Quinn, Fred A., Jr.)—1085(L)
Robinson, Kenneth. Elastic energy of an ellipsoidal inclusion in an infinite solid—1045
Rogers, F. T., Jr. and L. E. Schilberg. Observation of initial flow in a fluid obeying Darcy's law by radioactive-tracer techniques—233(L)
—— **L. E. Schilberg and H. L. Morrison.** Convection currents in porous media. IV. Remarks on the theory—1476
Rooksby, H. P. and E. G. Steward. Barium oxide on tungsten cathode interface—358(L)
Rorden, H. C. and A. Grieco. Measurement of dynamic internal dissipation and elasticity of soft plastics—842
Rosen, Philip (see Stuart, George W., Jr.)—236(L)
Ross, Frederick W. The propagation in a compressible fluid of finite oblique disturbances with energy exchange and change of state—1414
Row, Oliver (see Mukherjee, N. R.)—681(L)
Ruze, J. and M. Young. Experimental determination of the reflection coefficient of metal-plate media—277

Sadowsky, M. A. (see Sternberg, E.)—1121
Sasaki, Wataru (see Komagata, Sakuji)—1290(L)
Sato, Hiroshi. Decay of spectra components in isotropic turbulence—525(L)
Saxon, David S. (see Baños, Alfredo, Jr.)—117
Schedling, J. A. (see Blaha, F.)—11
Schelkunoff, S. A. General theory of symmetric biconical antennas—1330
Schiffman, T. (see Ekstein, H.)—1215(L)
Schilberg, L. E. (see Rogers, F. T., Jr.)—233(L)
—— (see Rogers, F. T., Jr.)—1476
Schissel, Paul. Radiofrequency mass spectrometer—680(L)
Schremp, Frederic W., John D. Ferry, and Warren W. Evans. Mechanical properties of substances of high molecular weight. IX. Non-Newtonian flow and stress relaxation in concentrated polyisobutylene and polystyrene solutions—711
Schulman, James H., Robert J. Ginther, Clifford C. Klick, Raymond S. Alger, and Robert A. Levy. Dosimetry of x-rays and gamma-rays by radiophotoluminescence—1479
Schultheiss, P. M. (see Reich, H. J.)—682(L)
Schulz, George (see Coolidge, John E.)—103(L)
Schwartz, C. M. (see Austin, A. E.)—847(L)
Schwinger, J. (see Marcuvitz, N.)—806
Seeger, R. J. and H. Polachek. Shock-wave phenomena: Waterlike substances—640
Serbin, H. Response of an aerodynamic system under external harmonic force—1307
Seybolt, A. U., Joseph S. Lukesh, and D. W. White. Allotropy of beryllium—986(L)
Shah, J. R. and L. Jacob. Investigation of field distribution in symmetrical electron lens—1236
Sheppard, C. W. and A. S. Householder. Mathematical basis of the interpretation of tracer experiments in closed steady-state systems—510
Shibuya, Motoichi (see Komagata, Sakuji)—1290(L)
Shrader, R. E. (see Larach, S.)—362(L)
Sibbitt, W. L. (see Wilson, L. H.)—1027
Siefert, Arthur V. and Francis T. Worrell. Role of tetragonal twins in the internal friction of copper manganese alloys—1257
Simon, Dorothy Martin. Comparison of quenching distance and inflammability limit data for propane-air flame—103(L)
Šimon, I., H. O. McMahon, and R. J. Bowen. Dry metallic friction as a function of temperature between 4.2°K and 600°K—177
—— **H. O. McMahon, and R. J. Bowen.** Erratum: Dry metallic friction as a function of temperature between 4.2°K and 600°K—848
Skalnik, J. G. (see Reich, H. J.)—682(L)
Slade, Jerome J. (see Reis, Alfred J.)—665
Slater, J. C. Effects of radiation on materials—237
Slifkin, L. M. On the orientations of zinc crystals produced by the Bridgman method—1216(L)
Small, T. R. (see Faro, I. D. V.)—220
Smith, Donald P. Catalysis by metal powders—1291(L)
Smoluchowski, R. (see Newkirk, J. B.)—290
—— (see Achter, M. R.)—1260
—— (see Opinsky, A. J.)—1380
—— (see Opinsky, A. J.)—1488
—— (see Opinsky, A. J.)—1508(L)
Smullin, L. D. and W. G. Glass. Offset wave-guide junction as a reactive element—1124
—— Propagation of disturbances in one-dimensional accelerated electron streams—1496
Smyth, J. B. and C. P. Hubbard. Note on the "Attenuation of radio signals caused by scattering"—1387(L)
Smythe, W. R. Electric and magnetic forces between sphere and wire—521
—— On Kerr cell construction—1087(L)
—— The capacitance of a circular annulus—1499
Snoek, J. L. Natural width of a grain boundary in a metal—109(L)
Sollfrey, William. Wave propagation on helical wires—905

Spedden, H. R. (see Michael, A. B.)—1403
Speiser, Rudolph. (see Edwards, James W.)—424
Spencer, Domina Eberle. Separation of variables in electromagnetic theory—386
Squire, William. A problem in heat conduction—1508(L)
Sternberg, E., R. A. Eubanks, and M. A. Sadowsky. On the stress-function approaches of Boussinesq and Timpe to the axisymmetric problem of elasticity theory—1121
Stevenson, A. F. Exact and approximate equations for wave propagation in acoustic horns—1461
—— General theory of electromagnetic horns—1447
Steward, E. G. (see Rooksby, H. P.)—358(L)
Stollenwerk, E. (see Wegener, P.)—1077
Storer, James E. Impedance of an antenna over a large circular screen—1058
Storm, M. L. Heat conduction in simple metals—940
Straiton, A. W. (see LaGrone, A. H.)—672
Strong, H. M. (see Bundy, F. P.)—1069
Stuart, George W., Jr. and Philip Rosen. Cylindrical cavity filled with a dc discharge—236(L)
Szebehely, V. G. Relation between gas evolution and physical properties of liquids—627

Tai, C. T. Effect of a grounded slab on the radiation from a line source—405
Tani, Itiro. On the anomalous Magnus effect—1506(L)
Taub, A. H. and Nelson Wax. Erratum: Theory of the parallel plane diode—108
Taylor, Thomas T. and John R. Whinnery. Applications of potential theory to the design of linear arrays—19
Thompson, A. S. Numerical computation of neutron distribution and critical size—1223
Thompson, Donald O. (see Artman, Robert A.)—358(L)
Ticknor, L. B. (see Bever, M. B.)—1297(L)
Townes, C. H. Atomic clocks and frequency stabilization on microwave spectral lines—1365
Treuting, R. G. and W. T. Read, Jr. Mechanical determination of biaxial residual stress in sheet materials—130
Turnbull, D. (see Hoffman, R. E.)—634
—— (see Hoffman, R. E.)—984(L)
Twersky, Victor. On the nonspecular reflection of electromagnetic waves—825

Uhlig, Herbert H. Volta potentials of the copper-nickel alloys and several metals in air—1399

Van Bladel, J. Expandability of a wave-guide field in terms of normal modes—68
—— **and Thomas J. Higgins.** Cut-off frequency in two-dielectric layered rectangular wave guides—329
van de Lindt, W. J. (see Beljers, H. G.)—1506(L)
van der Reyden, D. Thermal expansion coefficients and the melting point of cubic elements—363(L)

Wahlin, H. B. The transmission of hydrogen through metals—1503(L)
Wales, M. Sedimentation equilibrium in concentrated polymer solutions—735
Warren, B. E. (see Keating, D. T.)—286
—— (see Norman, N.)—483
—— **B. L. Averbach, and B. W. Roberts.** Atomic size effect in the x-ray scattering by alloys—1493
Watanabe, D. (see Ogawa, S.)—1502(L)
Watson, John H. L. Negative charging of glass fibers under electron bombardment—1386(L)
Watson, R. B. On the directional patterns of polystyrene rod antennas—154
—— (see Cheney, M. G., Jr.)—675
Wax, Nelson (see Taub, A. H.)—108
—— Amplitude bounds for certain relaxation oscillations—278
Waymouth, J. F., Jr. Deterioration of oxide-coated cathodes under low duty-factor operation—80
Weber, D. (see Penner, S. S.)—1164
Wegener, P. and G. Lundquist. Condensation of water vapor in the shock tube below 150°K—233(L)
—— **S. Reed, Jr., E. Stollenwerk, and G. Lundquist.** Air condensation in hypersonic flow—1077
Wehner, G. (see Medicus, G.)—1388(L)
Wehner, Gottfried. Electron plasma oscillations—761
Weil, H. (see Poritsky, H.)—1002
Weissmann, Sigmund (see Reis, Alfred J.)—665
Welch, H. W., Jr., and W. G. Dow. Analysis of synchronous conditions in the cylindrical magnetron space charge—433
Wells, Charles P. (see Beth, Richard A.)—742
Went, J. J. (see Beljers, H. G.)—1506(L)
Wert, Charles (see Radavich, John)—367
Wexler, Aaron. Evaporation rate of liquid helium. I—1463
Whinnery, John R. (see Taylor, Thomas T.)—19
White, D. W. (see Seybolt, A. U.)—986(L)
White, J. R. (see Clark, O. H.)—474
Wicher, E. R. Influence of magnetic fields upon the propagation of electromagnetic waves in artificial dielectrics—1327
Wideröe, R. Investigations on the capturing of electrons in a 30-Mev betatron—362(L)
Wilbur, D. A. (see Cobine, J. D.)—835
Wilkinson, P. G. Properties of evaporated gold and tungsten oxides—226
—— Lattice distortion spectrum of evaporated gold—419
Wilson, L. H., W. L. Sibbitt, and M. Jakob. Flow of gases in porous media—1027
Winkler, Eva M. Density measurements in supersonic flow by means of the x-ray absorption method—201
Witte, Robert S. and Robert L. Anthony. Stress-temperature studies of transitions in rubbers—689
Woo, Way Dong. Transit time effect in a cylindrical diode—1333
Wood, R. E. (see Ritter, H. L.)—169
Woods, W. W. (see Clark, O. H.)—474
Woonton, G. A., J. A. Carruthers, H. A. Elliott, and E. Caroline Rigby. Diffraction errors in an optical measurement at radio wavelengths—390
Work, R. N. (see Quinn, Fred A., Jr.)—1085(L)
Worrell, Francis T. (see Siefert, Arthur V.)—1257
Wyckoff, H. O. (see Goldstein, N.)—417

Yamaguchi, Shigeto. Oriented crystals in the rolled plates of alloys—680(L)
—— On the etched surfaces of nickel single crystals—983(L)
—— Structure of oxide replica for electron microscopy—1295(L)
Yamaka, Eiso. Study of oxide-coated cathode by x-ray diffraction method—1087(L)
Yamamoto, K. (see Horio, M.)—966
Yamamoto, Takaaki (see Komagata, Sakuji)—1290(L)
Yeagley, Henry L. Preliminary study of a physical basis of bird navigation. Part II—746
Young, D. R. Temporary enhancement of hysteresis in barium titanate samples—523(L)
Young, M. (see Ruze, J.)—277
Yudowitch, K. L. Latex particle size from x-ray diffraction peaks—214

Zadeh, Lotfi A. On stability of linear varying-parameter systems—402
—— Initial conditions in linear varying-parameter systems—782
—— Note on the initial excitation of linear systems—1216(L)
Zener, Clarence. Theory of D_0 for atomic diffusion in metals—372

Subject Index to Volume 22

References with (L) are to Letters to the Editor

Ac characteristics of Si *p-n* junction, S. Komagata, M. Hatoyama, M. Shibuya, W. Sasaki, T. Yamamoto, and M. Kikuchi—1290(L)
Absolute reaction rate theory to some problems in annealing, Application of the, F. Wm. Cagle, Jr., and Henry Eyring—771
Absorption coefficients of metals and alloys for complex radioactive spectra, Simple technique for obtaining, Frank E. Jaumot, Jr., and Foster C. Nix—1294(L)
Acoustic horns, Exact and approximate equations for wave propagation in, A. F. Stevenson—1461
Aerodynamic system under external harmonic force, Response of an, H. Serbin—1307
Air condensation in hypersonic flow, P. Wegener, S. Reed, Jr., E. Stollenwerk, and G. Lundquist—1077
Air-coupled flexural waves, Theory of, Frank Press and Maurice Ewing—892
Air shocks in a tube, New method for the production of, A. B. Laponsky and R. J. Emrich—1297(L)
Allotropic transformation of hafnium, Pol Duwez—1174
Allotropy of beryllium, A. U. Seybolt, Joseph S. Lukesh, and D. W. White—986(L)
Alloys, copper, Plasticity and conductivity, analogous flow phenomena in, Rolland Sydney French—105(L)
Aluminum-zinc alloys, Anelastic effects arising from precipitation in, A. S. Nowick—925
Amplitude bounds for certain relaxation oscillations, Nelson Wax—278
Anelastic effects arising from precipitation in aluminum-zinc alloys, A. S. Nowick—925
Annealing twins during grain growth, Formation of, R. L. Fullman and J. C. Fisher—1350
Announcements—371, 414, 428, 554, 560, 574, 609, 654, 679, 722, 739, 988, 1090, and 1218
Anomalous Magnus effect, Itiro Tani—1506(L)
Antenna over a large circular screen, Impedance of, James E. Storer—1058
Antenna, Theory of the circular diffraction, Harold Levine and Charles H. Papas—29
Antennas and open-wire lines, Current and charge distributions on, D. J. Angelakos—910
Antennas, General theory of symmetric biconical, S. A. Schelkunoff—1330
Antennas, shaped-beam, General formulation for calculation of, A. S. Dunbar—1217(L)
Aperture, circular, Edge effects in a, Robert E. Houston and Robert H. Noble—1295(L)
Applications of potential theory to the design of linear arrays, Thomas T. Taylor and John R. Whinnery—19
Arcing at electrical contacts on closure. Part I. Dependence upon surface conditions and circuit parameters, L. H. Germer—955
Arcing at electrical contacts on closure. Part II. The initiation of an arc, L. H. Germer—1133
Asymptotic approximation for the normal modes in sound channel wave propagation, N. A. Haskell—157
Atomic clocks and frequency stabilization on microwave spectral lines, C. H. Townes—1365
Atomic diffusion in metals, Theory of D_0 for, Clarence Zener—372
Atomic size effect in the x-ray scattering by alloys, B. E. Warren, B. L. Averbach, and B. W. Roberts—1493
Attenuation of radio signals caused by scattering, J. B. Smyth and C. P. Hubbard—1387(L)
Attenuation of radio signals caused by scattering, Reply to, A. H. LaGrone—1387(L)
Auxiliary current on transistor operation, Effect of, H. J. Reich, P. M. Schultheiss, J. G. Skalnik, T. Flynn, and J. E. Gibson—682(L)
Axially symmetric systems for generating and measuring magnetic fields. Part I, Milan Wayne Garrett—1091
Axisymmetric body forms for specified pressure distributions, Approximation of, John S. McNown and En-Yun Hsu—864
Axisymmetric problem of elasticity theory, Stress-function approaches of Boussinesq and Timpe to, E. Sternberg, R. A. Eubanks, and M. A. Sadowsky—1121

Barium oxide from various base metals and of strontium oxide from platinum, The evaporation products of, L. T. Aldrich—1168
Barium oxide on tungsten cathode interface, Eugene B. Hensley and John H. Affleck—359(L)
Barium oxide with excess barium, Optical absorption, Evan O. Kane—1214(L)
Barium oxide on tungsten cathode interface, H. P. Rooksby and E. G. Steward—358(L)
Behavior of the resistance ignitor in mercury, W. W. Rigrod—787
Beryllium, Allotropy of, A. U. Seybolt, Joseph S. Lukesh, and D. W. White—986(L)
Beta-ray autoradiographs of metals and minerals, A technique for preparing, A. B. Michael, W. Z. Leavitt, M. B. Bever, and H. R. Spedden—1403
Bird navigation, Preliminary study of a physical basis of, Part II, Henry L. Yeagley—746
Books—94, 682, 849, and 1390
Boride cathodes, J. M. Lafferty—299
Branching of slip lines in alpha-brass, Harry Czyzewski—846(L)

Calculation of diffusion penetration curves for surface and grain boundary diffusion, J. C. Fisher—74
Calculation of the electrical capacitance of a cube, Daniel Kinseth Reitan and Thomas James Higgins—223
Cantilever-strut, Finite deflections of, Richard A. Beth and Charles P. Wells—742
Capacitance of a circular annulus, W. R. Smythe—1499
Carbon black-oil suspensions, Electrical properties of some, Michael J. Forster and Darwin J. Mead—705
Carbon diffusion in metallic carbides, Measurement of, G. C. Kuczynski and R. Landauer—952
Carbon, oxygen, and sulfur content of Chilean coppers as related to cuprous-oxide rectifiers, C. C. Hein and W. M. Hickam—1192
Cascaded binary counter with feedback, G. Franklin Montgomery—780
Catalysis by metal powders, Donald P. Smith—1291(L)
Cathodes, oxide-coated, Deterioration of, under low duty-factor operation, J. F. Waymouth, Jr.—80
Cathodoluminescence of zinc orthosilicate with manganese activator, S. Larach and R. E. Shrader—362(L)
Circuit concept, A critical study of the, Jesse Gerald Chaney—1429
Coefficients of friction, static and kinetic, Nature of, Ernest Rabinowicz—1373
Coherent twin boundaries in copper, Interfacial free energy of, R. L. Fullman—448
Column behavior under conditions of compressive stress wave propagation, George Gerard and Herbert Becker—1298(L)
Comparison of quenching distance and inflammability limit data for propane-air flames, Dorothy Martin Simon—103(L)

Composition dependence of the elastic parameters of beta-brass, John S. Rinehart—1089(L)
Compressible supersonic flow in jets under the Kármán-Tsien pressure-volume relation, N. Coburn—124
Condensation of water vapor in the shock tube below 150°K, P. Wegener and G. Lundquist—233(L)
Condenser aperture device for electron microscopes, J. D. Boadway—104(L)
Contact potential variations on freshly condensed metal films at low pressures, Leland L. Antes and Norman Hackerman—1395
Convection currents in porous media. IV. Remarks on the theory, F. T. Rogers, Jr., L. E. Schilberg, and H. L. Morrison—1476
Copper alloys, Plasticity and conductivity, analogous flow phenomena in, Rolland Sydney French—105(L)
Copper-copper oxide rectifiers, Asymmetric heat conduction in, F. Hubbard Horn—1214(L)
Corona discharges in pure N_2, O_2, and mixtures thereof, Negative coaxial cylindrical, Charles G. Miller and Leonard B. Loeb—614
Corona discharges in pure N_2, O_2, and mixtures thereof, Positive coaxial cylindrical, Charles G. Miller and Leonard B. Loeb—494
Corona from ice points, Herman W. Bandel—984(L)
Coronas with coaxial geometry in pure N_2, pure O_2, and various mixtures at pressures from atmospheric to 27 mm, Starting potentials of positive and negative, Charles G. Miller and Leonard B. Loeb—740
Correlating modulus for fluid resistance in accelerated motion, H. W. Iversen and R. Balent—324
Creep and relaxation. III, B. Gross and H. Pelzer—1035
Crystal structure of the sigma-phase in the Co-Cr system, J. S. Kasper, B. F. Decker, and J. R. Belanger—361(L)
Crystal systems with low loss, Ruth Baumann Fry and William J. Fry—198
Crystallographic aspect of slip in body-centered cubic single crystals. I. Theoretical considerations, A. J. Opinsky and R. Smoluchowski—1380
Crystallographic aspect of slip in body-centered cubic single crystals. II. Interpretation of experiments, A. J. Opinsky and R. Smoluchowski—1488
Crystallography and interfacial free energy of noncoherent twin boundaries in copper, R. L. Fullman—456
Crystals, iron single, Yielding behavior of, A. N. Holden—1290(L)
Crystals, nickel single, On the etched surfaces of, Shigeto Yamaguchi—983(L)
Crystals of copper, cold-worked single, Internal friction of, Ryukiti Robert Hasiguti and Tadamasa Hirai—1084(L)
Crystals, oriented, in the rolled plates of alloys, Shigeto Yamaguchi—680(L)
Cuprous-oxide rectifiers, Carbon, oxygen, and sulfur content of Chilean coppers as related to, C. C. Hein and W. M. Hickam—1192
Current and charge distributions on antennas and open-wire lines, D. J. Angelakos—910
Cut-off frequency in two-dielectric layered rectangular wave guides, J. Van Bladel and Thomas J. Higgins—329
Cylinder with a conical nose, Experimental measurement of incompressible flow along a, E. V. Laitone—63
Cylindrical cavity filled with a dc discharge, George W. Stuart, Jr., and Philip Rosen—236(L)

Decay of spectra components in isotropic turbulence, Hiroshi Sato—525(L)
Deceleration and ionizing efficiency of radar meteors, D. W. R. McKinley—202
Deformation of body-centered cubic metals, E. A. Calnan and C. J. B. Clews—1508(L)
Density measurements in supersonic flow by means of the x-ray absorption method, Eva M. Winkler—201
Design of molecular pumps, Robert B. Jacobs—217
Deterioration of oxide-coated cathodes under low duty-factor operation, J. F. Waymouth, Jr.—80
Diaphragm, thin, Theory of the dynamic plastic deformation of, G. E. Hudson—1
Diatomic gases, Emission of radiation from. I. Approximate calculations, S. S. Penner—1298 (erratum)
Diatomic gases, Emission of radiation from. II. Experimental determination of effective average absorption coefficients of CO, S. S. Penner and D. Weber—1164
Dielectric coated wires, Propagation on, E. T. Kornhauser—525(L)
Dielectric properties of glass, Microwave measurements of, George Birnbaum, S. J. Kryder, and Harold Lyons—95
Dielectric rod antenna of circular cross section excited in the dominant mode, Experimental investigation of, C. W. Horton and C. M. McKinney, Jr.—1246
Dielectrics, artificial, Influence of magnetic fields upon the propagation of magnetic waves in, E. R. Wicher—1327
Difference between turbulence in a two-dimensional fluid and in a three-dimensional fluid, T. D. Lee—524(L)
Differential equations, Partial, describing steady current flow in intrinsic semiconductors, R. C. Prim—1388(L)
Diffraction errors in an optical measurement at radio wavelengths, G. A. Woonton, J. A. Carruthers, H. A. Elliott, and E. Caroline Rigby—390
Diffraction of a plane electromagnetic wave by a paraboloid of revolution, C. W. Horton and F. C. Karal, Jr.—575
Diffraction of electromagnetic waves by two conducting parallel half-planes, M. G. Cheney, Jr., and Robert B. Watson—675
Diffraction pattern in a circular aperture measured in the microwave region, C. L. Andrews—520 (erratum)
Diffraction pattern of microwaves near rods, C. L. Andrews—465
Diffusion, surface and grain boundary, Calculation of penetration curves for, J. C. Fisher—74
Digital information storage in three dimensions using magnetic cores, Jay W. Forrester—44
Directional distribution of 1040-kev radiation from a high voltage x-ray tube, N. Goldstein, U. Fano, and H. O. Wyckoff—417
Directional patterns of polystyrene rod antennas, R. B. Watson—154
Distribution of slip in metal crystals, F. C. Frank—1386(L)
Dosimetry of x-rays and gamma-rays by radiophotoluminescence, J. H. Schulman, R. J. Ginther, C. C. Klick, R. S. Alger, and R. A. Levy—1479
Dry metallic friction as a function of temperature between 4.2°K and 600°K, I. Šimon, H. O. McMahon, and R. J. Bowen—177
—— I. Šimon, H. O. McMahon, and R. J. Bowen—848 (erratum)
Dust particles, Static electrification of, on dispersion into a cloud, John E. Coolidge and George Schulz—103(L)
Dust particles, Static electrification of, on dispersion into a cloud, Wulf B. Kunkel—103(L)
Dynamic internal dissipation and elasticity of soft plastics, Measurement of, H. C. Rorden and A. Grieco—842
Dynamic load simulator, conservative, Design and analysis of, E. H. Gamble and B. W. Hatten—1250
Dynamic measurements of physical properties of pulp and paper by audiofrequency sound, M. Horio and S. Onogi—971
Dynamic method for measuring the specific heat of metals, Alan M. Nathan—234(L)

Effect of size and spectral purity of source on fringe pattern of the Mach-Zehnder interferometer, F. D. Bennett—776

Effective earth's radius for radiowave propagation beyond the horizon, William Miller—55
Effects of radiation on materials, J. C. Slater—237
Elastic energy of an ellipsoidal inclusion in an infinite solid, Kenneth Robinson—1045
Elastic parameters of beta-brass, Robert A. Artman and Donald O. Thompson—358(L)
Electric and magnetic constants of metallic delay media containing obstacles of arbitrary shape and thickness, Seymour B. Cohn—628
Electric and magnetic forces between sphere and wire, W. R. Smythe—521
Electric dipoles in the presence of elliptic and circular cylinders, Winston S. Lucke—14
Electric tunnel effect across thin insulator films in contacts, Ragnar Holm—569
——Ragnar Holm—1217 (errata)
Electrical breakdown over insulators in high vacuum, Paul H. Gleichauf—535
Electrical breakdown over insulators in high vacuum, Paul H. Gleichauf—766
Electrical charge storage in polystyrene capacitors, L. A. Matheson and V. J. Caldecourt—1176
Electrical method for investigating the nature and behavior of small, airborne, charged particles, J. H. Daniel and F. S. Brackett—542
Electrical properties of selenium. I. Single crystals, H. W. Henkels—916
Electrical properties of selenium. II. Microcrystalline selenium, H. W. Henkels—1265
Electrical properties of some carbon black-oil suspensions, Michael J. Forster and Darwin J. Mead—705
Electrical properties of zinc oxide semiconductors, E. E. Hahn —855
Electrical resistivity of cold-worked copper-iron alloys, F. E. Hetherington and James Reekie—1293(L)
Electrode reactions in the glow discharge, F. E. Haworth—606
Electromagnetic horns, General theory of, A. F. Stevenson—1447
Electromagnetic scattering from spheres with sizes comparable to the wavelength, A. L. Aden—601
Electromagnetic waves from two concentric spheres, Scattering of, Arthur L. Aden and Milton Kerker—1242
Electron beam, Equivalent temperature of, M. E. Hines—1385(L)
Electron beam, Equivalent temperature of, Philip Parzen—1387(L)
Electron diffraction study on the ordered alloy Au_3Cu, S. Ogawa and D. Watanabe—1502(L)
Electron microradiography of electrodeposited metals, Comment on nomenclature in, G. M. Corney—682(L)
Electron Microscope Society of America, Program of the—110
Electron microscopes, Condenser aperture device for, J. D. Boadway—104(L)
Electron microscopic replica studies of porosity in fused iron catalysts, J. T. McCartney and R. B. Anderson—1441
Electron optical exploration of space charge in a cut-off magnetron, D. L. Reverdin—257
Electron plasma oscillations, Gottfried Wehner—761
Electron temperature *vs* noise temperature in low pressure mercury-argon discharges, M. A. Easley and W. W. Mumford—846(L)
Electronic torch and related high frequency phenomena, J. D. Cobine and D. A. Wilbur—835
Electrons from insulators, secondary, Pulse method of determining the energy distribution of, Kenneth G. McKay—89
Electrons in a 30-Mev betatron, Investigations on the capturing of, R. Wideröe—362(L)
Electrostatically induced permanent memory, Charles F. Pulvari—1039
Elliptic and circular cylinders, Electric dipoles in the presence of, Winston S. Lucke—14
Emission of radiation from diatomic gases. I. Approximate calculations, S. S. Penner—1298 (erratum)
Emission of radiation from diatomic gases. II. Experimental determination of effective average absorption coefficients of CO, S. S. Penner and D. Weber—1164
Emission, Secondary, of nickel-barium mixtures and rhenium when bombarded by electrons with energies from 50 to 8000 electron-volts, H. E. Farnsworth and M. J. Lun—77
Energy distribution of secondary electrons from insulators, Pulse method of determining, Kenneth G. McKay—89
Energy stored during cold-working of metals, Method for determining the, M. B. Bever and L. B. Ticknor—1297(L)
Envelope type of thermal conductivity tests, Theory of the, Arthur L. Loeb—282
—— Arthur L. Loeb—849 (erratum)
Epitaxy of alkali chlorides on metals, G. W. Johnson—797
Epitomization of the basic theory of the generalized Schwarz-Christoffel transformations as used in applied physics, Thomas James Higgins—365(L)
Etched surfaces of nickel single crystals, Shigeto Yamaguchi—983(L)
Evaporation products of barium oxide from various base metals and of strontium oxide from platinum, L. T. Aldrich —1168
Expandability of a wave-guide field in terms of normal modes, J. Van Bladel—68
Expected number of crossings of axis by linearly increasing function plus noise, Frank W. Lehan—1067
Experimental determination of the reflection coefficient of metal-plate media, J. Ruze and M. Young—277
Experimental measurement of incompressible flow along a cylinder with a conical nose, E. V. Laitone—63

Fermi level in a simple impurity semiconductor, Graphical determination of the, K. Lehovec and H. Kedesdy—65
Ferromagnetic materials, Internal friction of, A. Ferro and G. Montalenti—565
Force in dislocation theory, Concept of, M. O. Peach—1359
Forced vibration of reed as a method of determining viscoelasticity, M. Horio and S. Onogi—977
Fracture and yield stress of 1020 steel at low temperatures, A. S. Eldin and S. C. Collins—1296(L)
Free convection heat transfer from electrically heated wires, Erich A. Farber—1437

Gas evolution and physical properties of liquids, Relation between, V. G. Szebehely—627
Gas temperatures and elastic losses in low pressure mercury-argon discharges, C. Kenty, M. A. Easley, and B. T. Barnes —1006
Gases in porous media, Flow of, L. H. Wilson, W. L. Sibbitt, and M. Jakob—1027
Gases in rocket flames, Measurement of velocity and pressure by spectroscopic methods, F. P. Bundy, H. M. Strong, and A. B. Gregg—1069
Geiger counter response at moderately high rates, Reliability of, L. G. Parratt and C. F. Hempstead—1502(L)
Glass fibers under electron bombardment, Negative charging of, John H. L. Watson—1386(L)
Glass, Mechanical properties of, F. W. Preston—48 (erratum)
Glass, Microwave measurements of the dielectric properties of, George Birnbaum, S. J. Kryder, and Harold Lyons—95
Gold wire at high temperatures, Deformation of, B. H. Alexander, M. H. Dawson, and H. P. Kling—439
Grain boundaries and their structure, Diffusion in, M. R. Achter and R. Smoluchowski—1260
Grain boundary in a metal, Natural width of, J. L. Snoek—109(L)

Grain growth, Formation of annealing twins during, R. L. Fullman and J. C. Fisher—1350
Graphical determination of the Fermi level in a simple impurity semiconductor, K. Lehovec and H. Kedesdy—65
Graphite at elevated temperatures, Mechanical properties of, C. Malmstrom, R. Keen, and L. Green, Jr.—593
Grounded slab on the radiation from a line source, Effect of a, C. T. Tai—405

Hafnium, Allotropic transformation of, Pol Duwez—1174
Heat conduction, A problem in, William Squire—1508(L)
Heat conduction, asymmetric, in copper-copper oxide rectifiers, F. Hubbard Horn—1214(L)
Heat conduction in simple metals, M. L. Storm—940
Heat conduction, Problem in, Boris Podolsky—581
Helical antennas with sinusoidal current, Radiation field of, E. T. Kornhauser—887
Helical wires, Wave propagation on, William Sollfrey—905
Helium cryostat design problem, A finite difference treatment of, Warren E. Henry—1439
Helium, liquid, Evaporation rate of. I, Aaron Wexler—1463
High temperature structure and thermal expansion of some metals as determined by x-ray diffraction data. I. Platinum, tantalum, niobium, and molybdenum, James W. Edwards, Rudolph Speiser, and Herrick L. Johnston—424
Hollow cathode for positive ion studies in cathode-ray tubes, C. H. Bachman, Harold Eubank, and George Hall—1208
Hydrogen through metals, Transmission of, H. B. Wahlin—1503(L)
Hydrostatic pressure in an electron beam on the operation of traveling-wave devices, Effect of, Philip Parzen and Ladislas Goldstein—398
Hypersonic flow at a Mach number of 10, I. D. V. Faro, T. R. Small, and F. K. Hill—220
Hysteresis in barium titanate samples, Temporary enhancement of, D. R. Young—523(L)

Impact flash at high speed water entry, J. H. McMillen, R. L. Kramer, and D. E. Allmand—360(L)
Improvements in visual depiction of magnetic lines of force by means of a gas discharge, F. Blaha and J. A. Schedling—11
Influence of magnetic fields upon the propagation of electromagnetic waves in artificial dielectrics, E. R. Wicher—1327
Information theory and most efficient codings for communication or memory devices, L. Brillouin—1108
Initial conditions in linear varying-parameter systems, Lotfi A. Zadeh—782
Interfacial free energy of coherent twin boundaries in copper, R. L. Fullman—448
Intermetallic diffusion, Reinterpretation of experiments on, A. S. Nowick—1182
Internal friction of cold-worked single crystals of copper, Ryukiti Robert Hasiguti and Tadamasa Hirai—1084(L)
Internal friction of copper manganese alloys, Role of tetragonal twins in, Arthur V. Siefert and Francis T. Worrell—1257
Investigations on the capturing of electrons in a 30-Mev betatron, R. Wideröe—362(L)
Iron-silicon alloys heat treated in a magnetic field, Matilda Goertz—964
Iron single crystals, Yielding behavior of, A. N. Holden—1290(L)

Kerr cell construction, W. R. Smythe—1087(L)
Kerr cell photography of high speed phenomena, E. M. Pugh, R. v. Heine-Geldern, S. Foner, and E. C. Mutschler—487
Kerr cell, Transmission line, J. W. Beams and H. S. Morton, Jr.—523(L)
Kinetics of ordering the alloy AuCu, G. J. Dienes—1020

Latex particle size from x-ray diffraction peaks, K. L. Yudowitch—214
Lattice and grain boundary self-diffusion in silver, R. E. Hoffman and D. Turnbull—634
—— R. E. Hoffman and D. Turnbull—984 (erratum)
Lattice distortion spectrum of evaporated gold, P. G. Wilkinson—419
Lead telluride and lead selenide, Method of growing single crystals of, W. D. Lawson—1444
Leaky condenser oxide cathode interface, A. Eisenstein—138
Legendre polynomial approximations, Associated, R. Landauer—87
Linear arrays, Applications of potential theory to the design of, Thomas T. Taylor and John R. Whinnery—19
Linear expansion coefficient and melting point of metals, G. Bonfiglioli and G. Montalenti—1089(L)
Linear systems, Initial excitation of, L. A. Zadeh—1216(L)
Linear varying-parameter systems, Initial conditions in, Lotfi A. Zadeh—782
Linear varying-parameter systems, Stability of, Lotfi A. Zadeh—402
Linearly increasing function plus noise, Expected number of crossings of axis, Frank W. Lehan—1067
Long-range ballistic rocket, Accuracy of the, W. E. Frye—585
Long-range order in beta-brass and Cu_3Au, D. T. Keating and B. E. Warren—286
Lubrication at extreme pressures with mineral oil films, O. H. Clark, W. W. Woods, and J. R. White—474

Mach number of 10, Hypersonic flow at, I. D. V. Faro, T. R. Small, and F. K. Hill—220
Mach-Zehnder interferometer, Effect of size and spectral purity of source on fringe pattern of the, F. D. Bennett—776
Magnetic cores, Digital information storage in three dimensions using, Jay W. Forrester—44
Magnetic lines of force by means of a gas discharge, Improvements in visual depiction of, F. Blaha and J. A. Schedling—11
Magnetic losses in anisotropic bars of ferrite at ultra-high frequencies, H. G. Beljers, W. J. van de Lindt, and J. J. Went—1506(L)
Magnetic scaling circuit, Hellmuth Hertz—107(L)
Magnetron cathodes, Enhanced emission from, Robert L. Jepsen and Marcel W. Muller—1196
Mathematical basis of the interpretation of tracer experiments in closed steady-state systems, C. W. Sheppard and A. S. Householder—510
Mathematical data for electron drain on positive ion sources, S. E. Rauch—1128
Maxwell's demon cannot operate: Information and entropy. I, L. Brillouin—334
Measurement of velocity and pressure of gases in rocket flames by spectroscopic methods, F. P. Bundy, H. M. Strong, and A. B. Gregg—1069
Mechanical determination of biaxial residual stress in sheet materials, R. G. Treuting and W. T. Read, Jr.—130
Mechanical properties of glass, F. W. Preston—48 (erratum)
Mechanical properties of graphite at elevated temperatures, C. Malmstrom, R. Keen, and L. Green, Jr.—593
Mechanical properties of substances of high molecular weight. IX. Non-Newtonian flow and stress relaxation in concentrated polyisobutylene and polystyrene solutions, Frederic W. Schremp, John D. Ferry, and Warren W. Evans—711
Mechanical properties of substances of high molecular weight. X. The relaxation distribution function in polyisobutylene and its solutions, John D. Ferry, Edwin R. Fitzgerald, Myrle F. Johnson, and Lester D. Grandine, Jr.—717
Memory devices, Information theory and most efficient codings for, L. Brillouin—1108

Memory, permanent, Electrostatically induced, Charles F. Pulvari—1039
Metallic behavior of $MoSi_2$, Frank W. Glaser—103(L)
Metallic delay media containing obstacles of arbitrary shape and thickness, Electric and magnetic constants of, Seymour B. Cohn—628
Metallic pipe filled with a conducting liquid, Conduction of current in a, H. Poritsky and H. Weil—1002
Metallographic study of diffusion interfaces, G. C. Kuczynski and B. H. Alexander—344
Metals, energy stored during cold-working of, Method for determining, M. B. Bever and L. B. Ticknow—1297(L)
Metals, Epitaxy of alkali chlorides on, G. W. Johnson—797
Metals, liquid, Surface tension of, N. R. Mukherjee—1215(L)
Microwave filters employing a single cavity excited in more than one mode, Wei-guan Lin—989
Microwave measurements of the dielectric properties of glass, George Birnbaum, S. J. Kryder, and Harold Lyons—95
Mixed gas flows, Generality of, Max M. Munk—524(L)

Natural width of a grain boundary in a metal, J. L. Snoek—109(L)
Necessary number of elements in a directional ring aerial, H. Lottrup Knudsen—1299
Negative coaxial cylindrical corona discharges in pure N_2, O_2, and mixtures thereof, Charles G. Miller and Leonard B. Loeb—614
Neutron distribution and critical size, Numerical computation of, A. S. Thompson—1223
New booklets—1249
Newtonian flow, Studies in. I. The dependence of the viscosity of liquids on temperature, Arthur K. Doolittle—1031
Newtonian flow, Studies in. II. The dependence of the viscosity of liquids on free-space, Arthur K. Doolittle—1471
Nickel-barium mixtures and rhenium when bombarded by electrons with energies from 50 to 8000 electron-volts, Secondary emission of, H. E. Farnsworth and M. J. Lun—77
Nickel single crystals, On the etched surfaces of, Shigeto Yamaguchi—983(L)
Nickel under tension, Initial susceptibility of, H. J. Peppiatt and B. N. Brockhouse—985(L)
Noble gas hot cathode diodes with negative arc drop, G. Medicus and G. Wehner—1388(L)
Noncontact temperature measuring device, J. E. Field and S. D. Gehman—106(L)
Nonlinear impedance element, Power spectrum of a narrow band noise passed through, John L. McLucas and Richard C. Raymond—1211
Nonlinear oscillator, Discrete energy levels of, James H. Moran—1355
Nonlinear vibration theory, Studies in, Stanley Fifer—1421
Nonspecular reflection of electromagnetic waves, Victor Twersky—825
Nuclear magnetic resonance study of transitions in polymers, L. V. Holroyd, R. S. Codrington, B. A. Mrowca, and E. Guth—696
Numerical computation of neutron distribution and critical size, A. S. Thompson—1223

Objective for use in the electron microscopy of ultra-thin sections, James Hillier—135
Observation of initial flow in a fluid obeying Darcy's law by radioactive-tracer techniques, F. T. Rogers, Jr., and L. E. Schilberg—233(L)
Offset wave-guide junction as a reactive element, L. D. Smullin and W. G. Glass—1124
Optimum source size for the Mach-Zehnder interferometer, F. D. Bennett—184
Oriented crystals in the rolled plates of alloys, Shigeto Yamaguchi—680(L)
Original authorship of formulas given in Clark and Deutsch's paper, M. Reiner and G. W. Scott Blair—236 (erratum)
Oscillations, Electron plasma, Gottfried Wehner—761
Oscillations of magnetic suspensions, Knox Millsaps and J. C. McPherson—429
Oscillations, Predominantly subharmonic, Carl A. Ludeke—1321
Oscillator, nonlinear, Discrete energy levels of, James H. Moran—1355
Oxide-coated cathode by x-ray diffraction method, Study of, Eiso Yamaka—1087(L)
Oxide-coated cathodes, Initial decay of, T. Hibi and K. Ishikawa—986(L)
Oxide replica for electron microscopy, Structure of, Shigeto Yamaguchi—1295(L)

Parallel plane diode, Theory of the, A. H. Taub and Nelson Wax—108 (erratum)
Parallelepipeds, almost cubic, Elastic vibrations of, H. Ekstein and T. Schiffman—1215(L)
Parametric excitation, N. Minorsky—49
Periodic statistical distortion of unidirectionally ordered diffractors, with application to collagen, Richard S. Bear and Orvil E. A. Bolduan—191
Permanent magnet lenses, John H. Reisner—561
Phase equilibria in an ordering alloy system, J. B. Newkirk, R. Smoluchowski, A. H. Geisler, and D. L. Martin—290
Photoconductivity of composite photoemissive cathodes, Serge Pakswer and William O. Reed—987(L)
Photoelasticity, Three-dimensional, R. C. O'Rourke—872
Physical entropy and information. II, L. Brillouin—338
Plane waves by soft obstacles, On the scattering of. I. Spherical obstacles, Robert W. Hart and Elliott W. Montroll—376
Plane waves, Scattering of, by soft obstacles. II. Scattering by cylinders, spheroids, and disks, Elliott W. Montroll and Robert W. Hart—1278
Plastic deformation of pure single crystals of lead and copper, Peter W. Neurath and James S. Koehler—621
Plasticity and conductivity, analogous flow phenomena in copper alloys, Rolland Sydney French—105(L)
Polystyrene capacitors, Electrical charge storage in, L. A. Matheson and V. J. Caldecourt—1176
Polystyrene particles in conjunction with shadow casting to the study of polished metallic surfaces, Applications of, I-Ming Feng—820
Portrait shadow-casting, Delbert E. Philpott—982(L)
Positive and negative coronas with coaxial geometry in pure N, pure O, and various mixtures at pressures from atmospheric to 27 mm, Starting potentials of, Charles G. Miller and Leonard B. Loeb—740
Positive coaxial cylindrical corona discharges in pure N_2, O_2, and mixtures thereof, Charles G. Miller and Leonard B. Loeb—494
Positive ion in cathode-ray tubes, Hollow cathode for studies, C. H. Bachman, Harold Eubank, and George Hall—1208
Positive-replica technique for electron microscopy, Modification of a, A. E. Austin and C. M. Schwartz—847(L)
Power spectrum of a narrow band noise passed through a nonlinear impedance element, John L. McLucas and Richard C. Raymond—1211
Precipitates of C and N in iron with an electron microscope, Study of, John Radavich and Charles Wert—367
Probe technique for the measurement of electron temperature, M. A. Easley—590
Production and stability of converging shock waves, Robert W. Perry and Arthur Kantrowitz—878
Propagation characteristics in a coaxial structure with two dielectrics, Alfredo Banos, Jr., David S. Saxon, and H. Gruen—117

Propagation in a compressible fluid of finite oblique disturbances with energy exchange and change of state, Frederick W. Ross—1414
Propagation of disturbances in one-dimensional accelerated electron streams, L. D. Smullin—1496
Propane-air flames, Comparison of quenching distance and inflammability limit data for, Dorothy Martin Simon—103(L)
Properties of evaporated gold and tungsten oxides, P. G. Wilkinson—226
Publication charge for Letters to the Editor—679
Pulp and paper, Dynamic measurements of physical properties of, by audiofrequency sound, M. Horio and S. Onogi—971
Pulse-annealing for the study of relaxation processes in solids, W. E. Parkins, G. J. Dienes, and F. W. Brown—1012
Pulse method of determining the energy distribution of secondary electrons from insulators, Kenneth G. McKay—89

Radiation from fast electron beams, Application of the, H. Motz—527
—— H. Motz—1217 (errata)
Radiation on materials, Effects of, J. C. Slater—237
Radio signals caused by scattering, Attenuation of, A. H. LaGrone, W. H. Benson, Jr., and A. W. Stratton—672
Radioactive gases in buried pipes, Leak location of, Andrew Gemant, Edward Hines, and E. L. Alexanderson—460
Radioactive tracers for rapid measurement of cutting tool life, M. Eugene Merchant and E. J. Krabacher—1507(L)
Radioactivity, A method of producing an electric current from, P. E. Ohmart—1504(L)
Radiofrequency mass spectrometer, Paul Schissel—680(L)
Radiowave propagation beyond the horizon, Effective earth's radius for, William Miller—55
Random noise in dielectric materials, J. H. Mason—235(L)
Random noise, low frequency, Generation and measurement of, R. R. Bennett and A. S. Fulton—1187
Random noise, Theory of. Phenomenological models. I, David Middleton—1143
—— David Middleton—1326 (errata)
Random noise, Theory of. Phenomenological models. II, David Middleton—1153
Ratio of the critical shear stresses, A. J. Opinsky and R. Smoluchowski—1508(L)
Reflecting surface to simulate an infinite conducting plane, S. J. Raff—610
Reflection and transmission, Note on, Bela A. Lengyel—263
Reflection and transmission at the surface of metal-plate media, Bela A. Lengyel—265
Refractory compounds as thermionic emitters, D. L. Goldwater and R. E. Haddad—70
Relation of tensile strength to brittle temperature in plasticized polymers, R. F. Boyer—723
Relations between initial and final orientations in rolling and annealing of silicon ferrite, B. F. Decker and David Harker—900
Representation of the electric and magnetic fields produced by currents and discontinuities in wave guides. I, N. Marcuvitz and J. Schwinger—806
Residual stress in wires by the layer removal method, Formulas for the determination of, W. T. Read, Jr.—415
Resistance ignitor in mercury, Behavior of the, W. W. Rigrod—787
Ring aerial, directional, Necessary number of elements in, H. Lottrup Knudsen—1299
Rubber and tissue strips, Free longitudinal vibrations of, Richard W. Lawton and Allen L. King—1340
Rubber, Visco-elasticity of, Robert B. Blizard—730
Rubbers, Stress-temperature studies of transitions in, Robert S. Witte and Robert L. Anthony—689

Scabbing of metals under explosive attack, Some quantitative data bearing on the, John S. Rinehart—555
Scaling circuit, Magnetic, Hellmuth Hertz—107(L)
Scattering and absorption of gamma-rays, M. S. Plesset and S. T. Cohen—350
Scattering phenomena in electron microscope image formation, C. E. Hall—655
Schwarz-Christoffel transformations as used in applied physics, Epitomization of the basic theory of the generalized, Thomas James Higgins—365(L)
Secondary emission of nickel-barium mixtures and rhenium when bombarded by electrons with energies from 50 to 8000 electron-volts, H. E. Farnsworth and M. J. Lun—77
Sedimentation equilibrium in concentrated polymer solutions, M. Wales—735
Selenium, Electrical properties of. I. Single crystals, H. W. Henkels—916
Selenium, Electrical properties of. II. Microcrystalline selenium, H. W. Henkels—1265
Selenium rectifiers after a voltage pulse in the blocking direction, Recovery of, K. Lehovec—934
Semiconductor bornite, C. W. Horton—364(L)
Semiconductor, zinc oxide, Some electrical properties of, E. E. Hahn—855
Semiconductors, intrinsic, Partial differential equations describing steady current flow in, R. C. Prim—1388(L)
Separation of variables in electromagnetic theory, Domina Eberle Spencer—386
Shaped-beam antennas, General formulation for calculation of, A. S. Dunbar—1217(L)
Shock-wave phenomena: Waterlike substances, R. J. Seeger and H. Polachek—640
Silicon ferrite, Relations between initial and final orientations in rolling and annealing of, B. F. Decker and David Harker—900
Spectral emissivity of coatings of thoria and other refractories as a function of temperature, F. H. Morgan—108(L)
Spectrum of isotropic temperature fluctuations in an isotropic turbulence, Stanley Corrsin—469
—— Stanley Corrsin—1292 (erratum)
Spheres, concentric, two, Scattering of electromagnetic waves from, Arthur L. Aden and Milton Kerker—1242
Stability of linear varying-parameter systems, Lotfi A. Zadeh—402
Static electrification of dust particles on dispersion into a cloud, John E. Coolidge and George Schulz—103(L)
Static electrification of dust particles on dispersion into a cloud, Wulf B. Kunkel—103(L)
Steel, 1020, at low temperature, Fracture and yield stress of, A. S. Eldin and S. C. Collins—1296(L)
Storage in three dimensions using magnetic cores, Digital information, Jay W. Forrester—44
Stress-function approaches of Boussinesq and Timpe to the axisymmetric problem of elasticity theory, E. Sternberg, R. A. Eubanks, and M. A. Sadowsky—1121
Stress-temperature studies of transitions in rubbers, Robert S. Witte and Robert L. Anthony—689
Stresses produced in a body by an exploding charge, Some experimental indications of, John S. Rinehart—1178
Surface condition of a sphere on its water-entry cavity, Effect of, Albert May—1219
Surface and grain boundary diffusion, Calculation of diffusion penetration curves for, J. C. Fisher—74
Surface-wave propagation over a coated plane conductor, Stephen S. Attwood—504
Susceptance of a thin iris in circular wave guide with the TM_{01} mode incident, Kenneth L. Dunning and Rufus G. Fellers—1316
Suspenoids in divergent electric fields, Motion and precipitation of, Herbert A. Pohl—869

Symmetric biconical antennas, General theory of, S. A. Schelkunoff—1330
Symmetrical electron lens, Investigation of field distribution, J. R. Shah and L. Jacob—1236
Synchronous conditions in the cylindrical magnetron space charge, Analysis of, H. W. Welch, Jr., and W. G. Dow—433

Teflon, Volume-temperature relationships for the room temperature transition in, Fred A. Quinn, Jr., Donald E. Roberts, and R. N. Work—1085(L)
Temperature function in a moving medium, R. H. Ritchie—1389(L)
Temperature measuring device, Noncontact, J. E. Field and S. D. Gehman—106(L)
Temporary enhancement of hysteresis in barium titanate samples, D. R. Young—523(L)
Theorem of Brouwer, H. F. Mathis—1084(L)
Theory of the circular diffraction antenna, Harold Levine and Charles H. Papas—29
Theory of the dynamic plastic deformation of a thin diaphragm, G. E. Hudson—1
Theory of the parallel plane diode, A. H. Taub and Nelson Wax—108 (erratum)
Thermal expansion coefficients and the melting point of cubic elements, D. van der Reyden—363(L)
Thermal expansion of Au-Cd alloys containing 47.5 atomic percent Cd, Coefficients of, Lo-ching Chang—525(L)
Thermal transpiration, Some measurements of, S. Chu Liang—148
Thermionic emitters, Certain refractory compounds as, D. L. Goldwater and R. E. Haddad—70
Thickness-shear and flexural vibrations of crystal plates, Raymond D. Mindlin—316
Thin films by electron diffraction, Studies of, N. R. Mukherjee and Oliver Row—681(L)
Thoria and other refractories as a function of temperature, Spectral emissivity of coatings of, F. H. Morgan—108(L)
Tracer experiments in closed steady-state systems, Mathematical basis of the interpretation of, C. W. Sheppard and A. S. Householder—510
Transit time effect in a cylindrical diode, Way Dong Woo—1333
Transitions in polymers, Nuclear magnetic resonance study of, L. V. Holroyd, R. S. Codrington, B. A. Mrowca, and E. Guth—696
Transitions in rubbers, Stress-temperature studies of, Robert S. Witte and Robert L. Anthony—689
Transmission-line equivalent of electronic traveling-wave systems, W. E. Mathews—310
Transmission line Kerr cell, J. W. Beams and H. S. Morton, Jr.—523(L)
Transmission of hydrogen through metals, H. B. Wahlin—1503(L)
Traveling wave tube, Amplification of the, Bernard Friedman—443
Tropospheric propagation beyond the horizon, J. Feinstein—1292(L)
Turbulence in a two-dimensional fluid and in a three-dimensional fluid, Difference between, T. D. Lee—524(L)

Ultrasonic propagation in liquids under high pressures: Velocity measurements on water, Gerald Holton—1407

V-Antennas, Theory of, Ronold King—1111
Vibrations, elastic, of almost cubic parallelepipeds, H. Ekstein and T. Schiffman—1215(L)
Variables in electromagnetic theory, Separation of, Domina Eberle Spencer—386
Viscoelastic behavior of certain polymeric systems, Application of Nutting's equation to, Rolf Buchdahl and Lawrence E. Nielsen—1344
Viscoelastic properties of several high polymers, M. Horio, S. Onogi, C. Nakayama, and K. Yamamoto—966
Viscoelasticity, Forced vibration of reed as a method of determining, M. Horio and S. Onogi—977
Visco-elasticity of rubber, Robert F. Blizard—730
Visual depiction of magnetic lines of force by means of a gas discharge, Improvements in, F. Blaha and J. A. Schedling—11
Volta potentials of the copper-nickel alloys and several metals in air, Herbert H. Uhlig—1399
Volume diffusion of metals, G. J. Dienes—848(L)
Volume-temperature relationships for the room temperature transition in Teflon, Fred A. Quinn, Jr., Donald E. Roberts, and R. N. Work—1085(L)

Water-entry cavity of a sphere, Effect of surface condition, Albert May—1219
Water movement induced by compaction of clastic sediments, Robert A. Howard and Carl E. Bleil—360(L)
Wave-guide field in terms of normal modes, Expandability of a, J. Van Bladel—68
Wave propagation on helical wires, William Sollfrey—905
Work-hardening of mild steel by explosive attack, John S. Rinehart—1086(L)

X-ray absorption correction for encased diffractors in the Debye-Scherrer technique, H. L. Ritter, R. L. Harris, and R. E. Wood—169
X-ray absorption in a crystal set at the Bragg angle, H. N. Campbell—1139
X-ray detection of long-range order in Ni_3Mn, B. L. Averbach—1088(L)
X-ray diffraction method for studying imperfections of crystal structure in polycrystalline specimens, Alfred J. Reis, Jerome J. Slade, Jr., and Sigmund Weissmann—665
X-ray measurement of long-range order in β AgZn, L. Muldawer—663
X-ray measurement of short-range order in Ag-Au, N. Norman and B. E. Warren—483

Zinc crystals produced by the Bridgman method, Orientations of, L. M. Slifkin—1216(L)
Zinc oxide semiconductor, Some electrical properties of, E. E. Hahn—855